

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **07-195385**

(43) Date of publication of application: **01.08.1995**

(51) Int. Cl. **B29C 39/02**
B29C 39/22
F16L 59/06
F25D 23/06
F25D 23/08
B29K 75:00
B29K105:04

(21) Application number: **05-353756**

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(22) Date of filing: **29.12.1993**

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(54) PRODUCTION OF VACUUM HEAT INSULATOR FOR CASING PANEL

(57) Abstract:

PURPOSE: To enhance the assembling property of a casing panel integrated with a vacuum heat insulator by integrating a gas barrier vessel with the casing panel and projecting a flange part connected to the inside of the gas barrier vessel to the outside of the casing, pouring and foaming urethane raw liquid to form core material and decomposing the vessel and thereafter sealing the flange part.

CONSTITUTION: A gas barrier vessel 7 formed into a prescribed shape is integrated with a casing panel 1 and a flange part 5 connected to the inside of the gas barrier vessel 7 is projected to the outside of the casing panel 1. Urethane raw liquid is poured into the vessel 7 from the flange part 5 and foamed to form the core material of a rigid urethane foam 9 having an open cell structure. Then urethane foam 9 overflowed from the flange part 5 is cut and sucked by a suction device through the flange part 5 and the gas barrier vessel 7 is decomposed. The flange part 5 is closed and sealed after suction. Thereby the assembling property of the casing panel 1 integrated with the vacuum heat insulator is made good.

*** NOTICES ***

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] Unite with a case panel a gas barrier container formed in a predetermined configuration, and a flange which continues into a gas barrier container is made to project besides a case panel. Make an urethane undiluted solution pour in and foam into a gas barrier container from a flange, and core material of rigid urethane foam of open cell structure is formed. Next, a manufacture method of a vacuum insulation object of a case panel characterized by carrying out sealing closure of the flange after decompressing the inside of a gas barrier container with an aspirator linked to a flange.

[Claim 2] Unite with a case panel a gas barrier container formed in a predetermined configuration, and a flange which continues into a gas barrier container is made to project besides a case panel. Make an urethane undiluted solution pour in and foam into a gas barrier container from a flange, and core material of rigid urethane foam of open cell structure is formed. Then, a manufacture method of a vacuum insulation object of a case panel characterized by carrying out sealing closure of the flange after decompressing the inside of a gas barrier container with an aspirator linked to a flange, giving heat to the whole gas barrier container.

[Claim 3] Unite with a case panel a gas barrier container formed in a predetermined configuration, and a flange which continues into a gas barrier container is made to project besides a case panel. Pour in and make an urethane undiluted solution foam from a flange to into a gas barrier container until it overflows from said flange, and core material of rigid urethane foam of open cell structure is formed. Next, a manufacture method of a vacuum insulation object of a case panel characterized by carrying out sealing closure of the flange after decompressing the inside of a gas barrier container with an aspirator which removed a part of skin which cuts urethane foam which overflowed from a flange and covers a front face, then was connected to a flange.

[Claim 4] Unite with a case panel a gas barrier container formed in a predetermined configuration, and a flange which continues into a gas barrier container is made to project besides a case panel. An urethane undiluted solution is poured in from a flange to a flange into a gas barrier container. Stick exfoliation material on a flange and a part of skin which removes exfoliation material and covers a front face is removed after hardening of an urethane undiluted solution. Next, a manufacture method of a vacuum insulation object of a case panel characterized by carrying out sealing closure of the flange after decompressing the inside of a gas barrier container with an aspirator linked to a flange.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the manufacture method of the vacuum insulation object of the case panel suitable for a refrigerator etc.

[0002]

[Description of the Prior Art] Conventionally, as the manufacture method of a vacuum insulation object, as shown in JP,5-60292,A, for example Into a fixture, facings between which silicone oil was made to be placed on a front face, such as paper and a nonwoven fabric, are carried. The rigid-urethane-foam panel of the open cell structure which carried out foaming in place of the mixed raw material which consists of the organic poly isocyanate, polyol, a catalyst, a foam stabilizer, a foaming agent, and a cellular free passage-ized agent, and obtained it in this is made into a core material. This is covered with the container which consists of a metal-plastics laminate film, and a means to decompress and seal the interior is known.

[0003]

[Problem(s) to be Solved by the Invention] If it is in the above mentioned manufacture method of a heat-insulating element, it is the manufacturing method of a rigid-urethane-foam block, for example, in case it is used for a refrigerator, a rigid-urethane-foam block is cut in the configuration of arbitration so that it may correspond to the case panel of a refrigerator, and a rigid-urethane-foam panel is created.

[0004] Therefore, in order to make from another process, respectively with the case panel by the side of a refrigerator main part, and a heat-insulating element and to attach a case panel and a heat-insulating element together after that, it is not desirable in respect of workability, *****, and cost nature.

[0005] Then, this invention aims at ** which offers the manufacturing method of the vacuum insulation object of the case panel which solved said problem.

[0006]

[Means for Solving the Problem] In order to attain said object, this invention unites with a case panel a gas barrier container formed in a predetermined configuration. A flange which continues into a gas barrier container is made to project besides a case panel, an urethane undiluted solution is made to pour in and foam into a gas barrier container from a flange, and core material of rigid urethane foam of open cell structure is formed. Subsequently After decompressing the inside of a gas barrier container with an aspirator linked to a flange, sealing closure of the flange is carried out.

[0007] You may make it give heat from outside to a gas barrier container in this manufacture method at the time of a process which decompresses the inside of a gas barrier container with an aspirator linked to a flange.

[0008] Moreover, a part of skin which serves as a film of a failure from a flange in a preceding paragraph process which decompresses the inside of a gas barrier container is removed, an urethane undiluted solution is poured in until it overflows from a flange, so that easy-ization of reduced pressure may be attained, and a portion which overflowed from a flange after hardening is cut. Or after pouring in an urethane undiluted solution to the limit to a flange, exfoliation material is stuck on a flange and exfoliation material is removed after hardening of an urethane undiluted solution.

[0009]

[Function] According to this manufacture method, with the aspirator linked to a flange, after decompressing the inside of a gas barrier container, the case panel of a vacuum insulation object and one equipped with the heat insulation function used as for example, a refrigerator main part can form without post processing simultaneously by carrying out sealing closure of the flange.

[0010]

[Example] Hereafter, one example of this invention is explained to details, referring to the drawing of drawing 1 thru/or drawing 6 .

[0011] One in drawing shows the case panel used as a refrigerator main part, and the vacuum insulation object 3 is established in the case panel 1.

[0012] The vacuum insulation object 3 serves as a configuration with which the core material of rigid urethane foam 9 was filled up in the gas barrier container 7 from the flange 5. While an end faces a flange 5 in the gas barrier container 7 according to the same construction material as the gas barrier container 7, the other end has a projection and structure by which sealing closure was carried out after the reduced pressure in the gas barrier container 7 from the case panel 1. In this case, a flange 5 may be the configuration by which continuous molding was carried out to the gas barrier container 7 and one.

[0013] The gas barrier container 7 piles up the gas barrier sheet of the shape of a tray which consists of polypropylene, nylon, Al foil, etc., welds 4 rounds with heat sealing, and is formed in the shape of [which was doubled in the case panel 1] a hollow container.

[0014] Next, the manufacture method is explained. First, the gas barrier container 7 formed in the predetermined configuration is united with case panel 1 grade, and the flange 5 which continues into the gas barrier container 7 is made to project besides the case panel 1 (drawing 2). Next, pour in and an urethane undiluted solution is made to foam from a flange 5 to into the gas barrier container 7 until it overflows from a flange 5, and the core material of the rigid urethane foam 9 of open cell structure is formed (drawing 3). Next, after cutting the rigid urethane foam 9 which overflowed from the flange 5 (drawing 4), the attraction duct 11 of an aspirator is connected and attracted to said flange 5 (drawing 5). By cutting off the portion which overflowed from the flange 5 in the field of a flange 5, as a result of removing a part, the film acting as a failure of the skin formed over the whole front face of rigid urethane foam 9 at the time of this attraction is lost, and the reduced pressure activity in the gas barrier container 7 comes to be done smoothly.

[0015] In this case, positive blow-down of the moisture of the rigid-urethane-foam 9 interior or a low-boiling point component is attained by giving heat from outside from the outside of the case panel 1 compulsorily to the gas barrier container 7 with the heating object 13 in which temperature management is carried out by the control section outside drawing, as shown in drawing 7 .

[0016] Next, sealing closure of said flange 7 is carried out with heat sealing after the completion of reduced pressure in the gas barrier container 7 (drawing 6). Thereby, the case panel 1 united with the vacuum insulation object comes to be obtained simultaneously.

[0017] Drawing 8 shows the modification for removing the skin of the rigid urethane foam 9 of flange 5 field. That is, in a process before and after decompressing the inside of the gas barrier container 7 from a flange 5, after pouring in an urethane undiluted solution to the limit to a flange 5, the exfoliation material 15, such as a non-woven fabric, is stuck on a flange 5, and a skin is removed by removing the exfoliation material 15 after hardening of an urethane undiluted solution. (Drawing 4) The case panel 1 united with the vacuum insulation object according to the reduced pressure process (drawing 5) of the gas barrier container 7 and the sealing closure process (drawing 6) of a flange 5 comes to be obtained simultaneously hereafter.

[0018] In addition, in this example, although the case panel 1 was explained about the refrigerator main part, it may be suitably carried out to other equipments.

[0019]

[Effect of the Invention] As mentioned above, without carrying out post processing according to this invention, as explained, the case panel united with the vacuum insulation object comes to be obtained simultaneously, and becomes workability, *****, and what is very desirable in respect of cost positive.

[Translation done.]

